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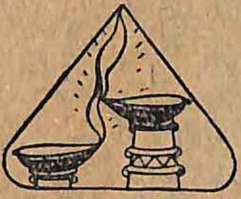
C.I.E. PUBLICATIONS

Publication No. 40

A REPORT ON NORMS
for
अशाब्दिक परीक्षा नं० १

(Non-Verbal Test I)
by
(J.W. Jenkins, M. Sc., Ph. D.)



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CENTRAL INSTITUTE OF EDUCATION
DELHI
1960

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PREFACE

This report on Norms for the Non-Verbal Test I by J.W. Jenkins is being published in consistence with our general policy giving the maximum possible information about our test to all those who wish to have it. Through this, we are not only able to throw more light on the use and interpretation of the test results, but can also share with our readers the problems and difficulties faced by us in adapting this test.

We shall be grateful to receive comments on this report as well as on the use of the test.

Our thanks are due to the headmasters, principals and teachers of the schools who so kindly gave us all the necessary facilities in our work.

Central Institute of Education
Delhi.
2nd April, 1960.

E.A. PIRES

2163

A REPORT ON NORMS FOR A NON-VERBAL TEST

While work on Verbal Group Tests of Intelligence was progressing, the need was also being felt for a Non-Verbal Test of Intelligence. A non-verbal test of intelligence is useful in that it can eliminate effects of schooling to a larger extent than the verbal tests can. Language being the medium of verbal tests, a child's achievement in it—even when only a minimum of it is required—plays an important part. This problem was of greater importance in Delhi because of its heterogeneous population. In spite of the fact that the medium of instruction for most children in schools in Delhi is Hindi, their achievements in Hindi can be quite different as they speak and learn different languages at home.

Preparation of a new non-verbal test could have taken a very long time. It was decided to find norms for our children on a culture-free non-verbal test of intelligence already in use. The Non-Verbal Test prepared by J.W. Jenkins and published by the National Foundation for Educational Research in England & Wales, London was chosen for this purpose.

Description of the test.

The test is divided into five subtests, each timed separately. The first subtest consists of recognising a figure similar to a set of three given ones (16 items). The second is filling in the blank given in a series of five figures (18 items). The third subtest asks children to point out the one figure out of five which does not belong with the others (16 items). The fourth subtest makes children mentally arrange a set of five given figures and point out the middle one (16 items). It taps mental ability differently from the second subtest in the sense that in the second subtest the pattern is already defined and the child has to pick out the element which is missing, while in the fourth subtest, the child is to discover the pattern mainly and then alone can he answer the questions. The fifth subtest is that of anologies where one, any one, of the four elements is missing (19 items).

There is a practice form for the test which has fifteen items, three similar to each of the five subtests. This was also translated in Hindi and administered before the test. It takes away the novelty and the unfamiliarity of the test and also helps to make the instructions for all the five tests clearer.

Sample for Norms.

In England this test is being used for age groups 10+ to 12+ We also wanted to use the test for the same age group. It was accordingly administered to 1,967 children from 53 schools of Delhi. The list of the schools is given in the appendix.

Mean scores of these groups were low generally, and of course much lower than those given by the author for the English children. The test could be profitably used for higher age groups in India. It was administered to another sample of 13+ and 14+. These children were selected from 41 schools, whose names are also indicated in the appendix.

Norms in terms of standard scores are provided for all the five ages.

The composition of the total sample is as follows:

Ages	Boys	Girls	Total
10+	299	226	525
11+	384	339	723
12+	358	361	719
13+	422	282	704
14+	360	284	644
TOTAL ..	1,823	1,492	3,315

These children came from classes V, VI, VII, VIII, IX and X. Children below class V were not included in the sample as they could not comprehend the instructions properly.

It would interest the reader to see how the means vary from age to age or from grade to grade. The following table gives the means of smaller groups split in terms of ages and grades :—

Grades / Ages	10+	11+	12+	13+	14+	Total
V	19·77 N=286	18·75 N=224	19·39 N=124		11·00 N=3	19·30 N=637
VI	25·04 N=190	25·12 N=329	24·75 N=302	22·10 N=162	20·54 N=69	24·26 N=1052
VII	30·38 N=45	32·22 N=157	32·26 N=248	28·94 N=230	27·45 N=173	30·28 N=853
VIII	38·75 N=4	37·31 N=13	37·27 N=45	33·58 N=196	32·86 N=198	33·78 N=456
IX				41·75 N=105	36·89 N=148	38·91 N=253
X				43·36 N=11	47·62 N=53	46·89 N=64
TOTAL ..	22·73 N=525	24·91 N=723	27·20 N=719	30·79 N=704	32·16 N=644	

Going by ages the mean scores achieved by the children of a particular age studying in different grades differ greatly. The average score of ten year olds studying in grade V is 19·77 while of those studying in VI class is 25·04. Similarly the difference between the mean scores of 12 year olds studying in classes VI and VII is 7·51 points. Performance of different age groups within the same grade differ either to a negligible extent or in the reverse direction. For example, in class VII, there is no difference in the mean achievement of 11 year olds and 12 year olds; 13 year olds score less than twelve year olds and 14 year olds still less. This is roughly the picture throughout this table. Considering the group as a whole the differences from grade to grade are sharper than differences from age to age. Most of the differences from grade to grade are approximately five points while most of those between ages are two points only.[1]

This has certain very interesting implications which may be considered one by one.

- (*a*) The test measures more of what is taught in schools rather than what can be picked up from the environment.
- (*b*) In Delhi (or may be in India) grades are more reliable bases than the ages as recorded in schools.
- (*c*) Because promotions are based entirely on children's achievement in school subjects, children of similar basic ability tend to cluster in the same grade.

Hypothesis (*a*) does not look very plausible. The test is a non-verbal one and does not directly depend upon the experiences provided by the school. Not all items involve geometrical figures though some do. One should imagine that more experience with the world around, over the years should enable the child to perform better on the test. The few items that do have geometrical figures use them merely as figures and understanding of their properties etc., is not involved—which is an experience provided mainly in schools.

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[1] A similar situation is found in the Manual of Directions for the Northumberland Mental Tests devised and standardised by Godfrey H. Thomson. The author reports his total population of 9½ to 14½ years of age distributed over grades below III to above VII. His means for grades are more stable than for ages. For Example in grade V, mean scores from ages 9½ to 14½ vary from 26·8 to 21·5. If we ignore small examples of 13 and 2 only at the two extremes, they vary only slightly around the score of 23, while means for ages 11½ over all the grades vary from 3·4 to 46·8. Leaving two extreme cases of small samples the means still vary from 8·7 to 45·9, which is too large a difference to need any comments. The situation is practically the same for all ages and all grades. (See Thomson, Godfrey H. The Northumberland Mental Tests : Manual of Directions, page 4).

Hypothesis (*b*) is not only plausible but is found to be true from experience. The recorded ages of the children in the schools are not their correct ages. The worst is that the error is not consistent. It is haphazard. A parent who is anxious to get his or her child admitted to school early may increase his ward's age, while the one who wants his child to have advantage later in competitive examinations or services may decrease his age.

Hypothesis (*c*) looks plausible again. Since promotions in our country are made solely on the basis of a child's achievement in school, accepting that achievement will be highly dependent upon basic abilities of the child, children would tend to be less varied in their abilities in a particular grade than within an age range.

The choice between age or grade norms for the use of intelligence tests in our schools needs deliberation and consciousness of implications involved in the use of either on the part of those who are forced to make this choice. In our schools children of a certain age (as recorded in schools) say 12 years may be found practically in any grade, right from 1st to IXth.[2] Conversely, in a particular class one may find children of all ages. Even in best of circumstances, the age range in any particular class may be four to five years. Assuming that these tests will mainly be used for selection and guidance purposes, consider two children in class eighth, an eleven year old child and a thirteen year old taking an intelligence test to qualify for science courses in the Higher Secondary. The raw score of these two children on I test, let us say, are 35 and 40 respectively. Compared to their own age groups, the eleven year old may have a standard score of 115 (or IQ of 115) and the thirteen-year old a standard score of 108 only. If our cut line was at 110, this eleven year old will readily be selected for the science course as well as some more of this age group whose raw scores are even less than this score of 35. At the moment all these children of 11 years of age are less capable of performing the tasks set in the test and therefore, presumably, have lesser chances of success in the task for which they are being selected. It may be argued that these children are basically superior (their IQ'S being higher) and will therefore do better in the long run. But the persons making the selection may be more interested in immediate success rather than ultimate success. But the other and more solid argument is that these so called eleven years olds may not really be 11 years old or the thirteen year old may actually be younger and hence all these IQ's and interpretations based on these may be misleading. If, on the other hand, children were all compared together, we could have greater confidence in their immediate success at least.

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[2]. From figures available from Bureau of Statistics, Delhi Administration.

Making grade as the common denominator, at least, is meaningful in the sense that it is a sure entity. In fact the argument is hardly needed to stress this point. The results on this test speak for the acceptance of grade norms.

In view of the above discussion, it seems more reasonable that grade norms should be depended upon rather than age norms. Both are provided at the end of the report. Age norms have been retained for two reasons. The orthodox teacher or educationist does not like to disassociate intelligence from chronological age. Theoretically, measurement of intelligence has been based on chronological age as the denominator, though for practical purposes and in our circumstances, grade norms appear more useful. Secondly, originally, our sample was selected for age groups and grade norms are being given only from whatever division by grades has been obtained from this sample. However, it is planned to get norms for VIII grade children separately during the session 1960-61 as this is the grade after which selection for different courses of higher secondary school is made.

Since this sample consisted of both boys and girls it was important to find out whether their achievements on this test differed. The following table gives their means, standard deviations, Ns and also the ratio of the differences between means and their standard errors.

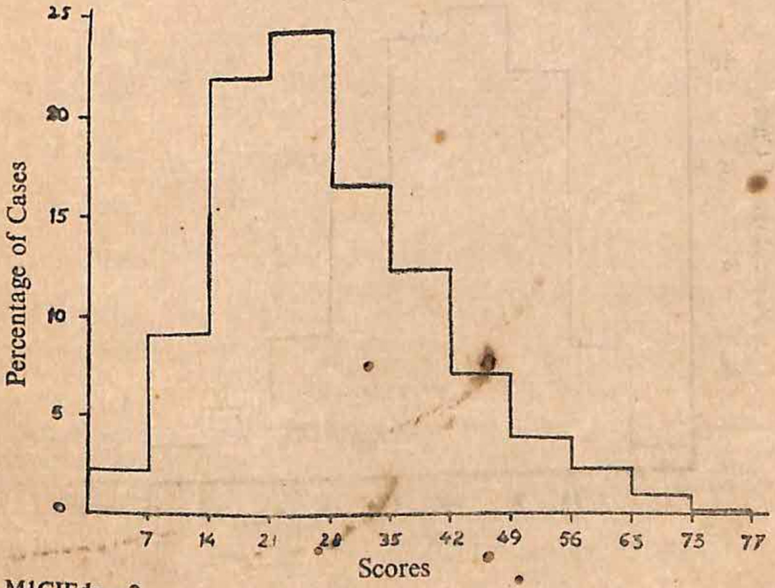
		Mean	SD	N	SD^2/N	SED	MB—MG	$\frac{\text{MB-MG}}{\text{SED}}$
14+	**Boys**	32·35	13·59	360	0·5128	1·03	0·45	0·44
	Girls	31·90	12·54	284	0·5536			
13+	**Boys**	30·85	13·44	422	0·4278	0·97	0·24	0·25
	Girls	30·61	12·05	282	0·5151			
12+	**Boys**	26·44	12·08	358	0·4125	0·85	—1·15	—1·78
	Girls	27·95	10·55	361	0·3084			
11+	**Boys**	23·73	10·76	384	0·3020	0·82	—2·51	—3·06
	Girls	26·24	11·27	339	0·3744			
10+	**Boys**	21·30	10·08	299	0·3398	0·88	—3·33	—3·78
	Girls	24·63	10·03	226	0·4457			

At ages 10+and 11+girls are doing better than boys, though later they lose this definite superiority. Girls, are by and large a more selected group in our schools than the boys. It may be that as the children grow older, their comparatively different experiences with the world outside tend to favour boys as far as performance on this test is concerned. The manual issued by National Foundation for Educational Research in England and Wales does not give any information on this point. This test has been adapted by the Australian Council for Educational Research for their own children. They do not provide any such information either. More data will be needed to confirm or deny these findings. However, keeping in view the fact that some of the differences are significant separate standard score norms are provided for both boys and girls.

Frequency distributions for all ages and graphs for total groups of boys and girls are given below :—

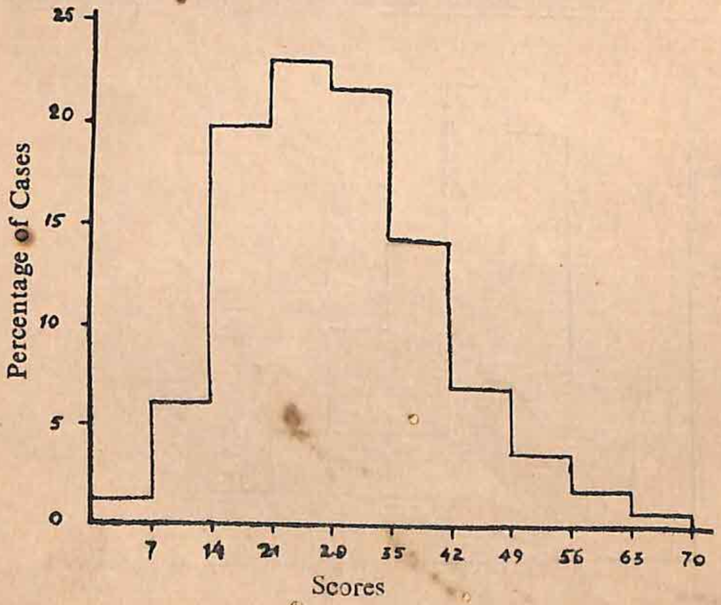
BOYS

Scores	Frequency						
	10+	11+	12+	13+	14+	Total	%age
0—6	16	9	11	2	5	43	2·36
7—13	49	40	34	26	16	165	9·05
14—20	81	128	74	69	47	399	21·89
21—27	78	89	93	104	74	438	24·03
28—34	42	51	57	72	78	300	16·46
35—41	24	38	45	60	54	221	12·12
42—48	5	19	23	39	40	126	6·91
49—55	1	7	15	25	21	69	3·78
56—62	3	2	5	17	16	43	2·36
63—69	—	1	1	8	8	18	0·99
70—76	—	—	—	—	1	1	0·05
77—83							
	299	384	358	422	360	1823	100·00



GIRLS

Scores	*Frequency*						
	10+	11+	12+	13+	14+	Total	%age
0—6	4	9	1	2	2	18	1·21
7—13	12	31	18	17	15	93	6·23
14—20	66	76	70	45	40	297	19·91
21—27	80	81	87	51	47	346	23·19
28—34	29	67	96	63	70	325	21·78
35—41	20	37	58	53	49	217	14·54
42—48	7	27	14	28	30	106	7·10
49—55	5	9	9	12	20	55	3·69
56—62	3	1	5	10	7	26	1·74
63—69	—	1	3	1	4	9	0·60
70—76	—	—	—	—	—	—	
TOTAL	226	339	361	282	284	1,492	99·99



On the difficulty of the test.

The test has proved difficult for our children in spite of the fact that it has a preliminary practice form. Below are given the frequency distributions for 85 items (for all ages). The difficulty value is the percentage of children who could answer the item correctly. These were worked out from small randomly selected groups from the total population of each age group. From the table one can notice that even at 14 plus as many as seventy percent of the items have difficulty values less than ·50. It of course becomes more and more difficult for lower age groups.

Number of items

	10+	11+	12+	13+	14+
·00—·09	7	8	6	5	1
·10—·19	30	20	21	11	10
·20—·29	14	19	17	17	11
·30—·39	18	11	16	18	20
·40—·49	7	15	9	15	18
·50—·59	2	3	5	6	13
·60—·69	4	5	3	6	2
·70—·79	1	1	4	3	6
·80—·89	2	1	1	3	2
·90—·99	0	2	3	1	2

Reliability of the Test.

Split half reliabilities were calculated on smaller groups selected randomly from larger groups for standardisation and the data are given below :—

Split-half Reliabilities

Age	N	r	Mean score of this sample	S D of this sample
10+	105	·90	22·16	9·69
11+	103	·89	25·62	10·40
12+	102	·91	26·80	11·30
13+	101	·92	30·35	12·26
14+	106	·96	33·01	15·59

J.W. Jenkins reports a split-half reliability of .95 for this test. The manual published by the Australian Council for Educational Research for the adapted form of this test reports two split-half reliability coefficients of .96 and .94 on random samples of 100 each from 11.6 and 12.6 standardisation groups. The reliability coefficients obtained for Indian children are slightly lower compared to these two figures. Only one of the coefficients is as high as .96. It may be remembered that the test has proved more difficult for our children.

The coefficients of correlation between two sets of scores obtained from the two administrations of this very test on the same groups are given below:—

Test-retest Reliabilities

Age	N	r	M_1	M_2	SD_1	SD_2
10+	53	·87	30·09	35·19	12·08	14·26
11+	65	·83	38·95	46·18	14·77	14·88
12+	56	·83	48·79	55·46	13·76	12·58
13+	45	·94	50·08	58·22	13·55	13·63
14+	31	·83	46·13	52·00	14·49	17·02
TOTAL	250	·88	42·17	48·82	15·68	16·54

(Children retested with Jenkin's Non-Verbal Test after an interval of one week).

The Australian Council for Educational Research reports an r of .87 for 177 children retested on a slightly modified form of this test after an interval of one week.

Validity of the Test.

Initially the test was accepted as a measure of general ability on its reputation as it has been accepted as a test of general intelligence elsewhere.

Though in itself increase in the percentages of children passing a particular item as age increases is no direct evidence of the validity of the test, nevertheless, once we accept that successful completion of the tasks set (in this case the items in the test) depends on the general ability of the child, the pass percentages on the items should increase with age. Below are recorded such pass percentages against each item over all the ages.

Sec. I

Sl. No.	10+	11+	12+	13+	14+
1.	89	95	92	96	93
2	84	92	90	83	90
3.	48	69	71	72	72
4.	79	83	93	89	89
5.	37	43	42	45	46
6.	66	63	81	75	78
7.	24	23	31	30	45
8.	15	7	17	13	12
9.	47	43	41	46	46
10.	58	54	67	42	49
11.	38	43	43	53	45
12.	20	25	26	40	40
13.	31	38	31	28	41
14.	5	14	11	6	12
15.	11	9	14	8	13
16.	21	11	16	15	24

Sec. II

Sl. No	10+	11+	12+	13+	14+
1.	46	54	55	63	58
2.	30	36	33	43	43
3.	38	33	36	42	42
4.	13	22	16	25	37
5.	43	48	55	59	57
6.	25	39	29	35	38
7.	24	29	29	38	37
8.	19	27	31	40	42
9.	17	18	23	30	26
10.	31	33	38	49	55
11.	18	23	22	28	30
12.	25	26	23	38	26
13.	12	13	16	31	37
14.	14	17	20	21	30
15.	17	18	12	17	26
16.	10	21	15	19	22
17.	13	10	12	28	23
18.	9	14	9	13	11

Sec. III

Sl. No.	10+	11+	12+	13+	14+
1.	68	72	73	81	87
2.	63	66	66	63	70
3.	64	69	75	78	75
4.	21	35	25	30	32
5.	38	46	45	49	56
6.	31	46	38	47	56
7.	43	46	48	57	57
8.	10	7	11	13	17
9.	17	35	31	27	32
10.	24	22	32	34	31
11.	8	8	6	6	11
12.	9	9	9	17	10
13.	33	28	27	40	37
14.	14	13	9	6	11
15.	26	19	26	45	40
16.	5	9	3	1	3

Sec. IV

S.No.	10+	11+	12+	13+	14+
1.	51	64	61	63	71
2.	37	42	45	53	57
3.	44	50	55	60	70
4.	44	45	55	53	67
5.	31	41	44	48	57
6.	29	42	38	37	54
7	34	42	42	43	47
8.	33	33	74	34	54
9.	35	48	53	61	62
10.	15	16	14	21	31
11.	25	31	35	35	43
12.	30	32	30	36	57
13.	19	18	31	32	40
14.	17	22	20	34	40
15.	14	14	18	27	30
16.	21	18	25	32	33

Sec. V

1.	6	20	25	23	32
2.	32	42	39	62	55
3.	37	43	40	50	52
4.	17	20	14	29	40
5.	15	17	17	33	39
6.	24	22	28	39	45
7.	35	31	32	43	44
8.	19	24	22	35	36
9.	16	13	17	26	35
10.	6	6	7	10	17

Sec. V—contd.

11.	15	19	19	19	31
12.	19	23	25	23	24
13.	14	17	21	27	27
14.	25	28	18	21	19
15.	19	21	33	26	31
16.	15	9	14	19	30
17.	13	18	16	20	20
18.	10	11	10	18	22
19.	10	20	11	21	20

Most of the items work satisfactorily *i.e.* going by ages, an increased percentage of children tend to answer them correctly (ignoring minor fluctuations here and there). However, a few seem to behave a little oddly *e.g.*, items 8, 9 and 10 in section I, 14 & 16 in section III and 14 in Section V. Since these pass percentages were computed from small samples, the pattern shown by these may not persist if another group of children from each age group were taken.

The correlations between scores on this test and teachers estimates of children's intelligence are reported below. For the grades VI and VII, these estimates were given by single teachers (class teachers) on a nine point scale. While for children of Class VIII, three teachers gave their estimates independently and a mean of these three was taken for purposes of calculating correlations.

Class	r	N	Mean j	Mean t
V	·23	61	26·64	4·87
VI	·49	65	34·78	3·89
VII	·43	55	46·31	4·80

The correlation for the group in class V is very low. Such has been our experience more than once. It may be that the teachers of lower grades are more inclined to confuse general ability with other variables or that they have fewer opportunities to assess the general abilities of their wards.

The correlation between the scores made on this test and on C.I.E. Verbal Group Test of Intelligence (13+) by children of class VIII of a particular school was (·71)

Norms.

Norms are provided in terms of normalised standard scores with their mean equal to 100 and standard deviation equal to 15. These were calculated directly from obtained distributions of scores. Proportion of cases below any score was compared to the same proportion in a normal distribution and appropriate value in the units quoted above was calculated. These may not be interpreted as IQs.

Both age and grade norms have been given for boys and girls separately. These were only a small number of cases in class VIII. These norms, therefore, may be considered only tentative. Fresh norms on a larger group representing this grade will be provided very soon.

Precentile norms are also given for the convenience of those who prefer it.

A separate Manual of Instructions is available.

BOYS

Standard Scores (age wise)

Raw Score	10+	11+	12+	13+	14+
0.					
1.					
2.					
3.					
4.	68				
5.	72		71		
6.	76	70	72		
7.	80	73	73		
8.	82	74	75		
9.	83	76	77	69	
10.	84	77	79	72	70
11.	85	80	80	74	72
12.	86	83	81	76	75
13.	88	83	83	77	76
14.	91	86	85	79	79
15.	92	88	86	82	80
16.	93	91	88	83	82
17.	94	93	88	85	83
18.	96	95	90	86	84
19.	98	96	92	88	85
20.	100	99	93	89	87
21.	102	100	95	91	88
22.	104	101	98	92	90
23.	106	103	99	94	91
24.	107	104	100	96	92
25.	108	106	101	96	93
26.	109	107	102	98	95
27.	110	108	103	99	96
28.	112	109	105	100	97
29.	114	110	106	101	100
30.	115	110	107	102	101
31.	115	112	107	103	102
32.	116	112	108	104	103
33.	117	113	109	105	104
34.	118	114	110	106	105
35.	120	115	111	106	105
36.	122	117	113	108	106
37.	124	117	114	109	107
38.	125	119	115	109	107
39.	125	121	116	110	109
40.	126	121	116	111	109
41.	128	122	117	112	111
42.	129	122	118	113	111
43.	131	124	118	113	113
44.		124	119	114	113
45.		126	121	115	115
46.		127	122	116	116
47.		128	122	117	116
48.		129	123	118	117
49.		130	124	119	117
50.			126	120	118
51.			128	120	119
52.			129	121	119
53.			129	122	120
54.			130	123	121
55.				123	122
56.				124	122
57.				125	124
58.				126	125
59.				127	126
60.				129	128
61.				130	129
62.					129
63.					130

GIRLS

Standard Scores (age wise)

Raw Score	10+	11+	12+	13+	14+	Raw Score	10+	11+	12+	13+	14+
6.		71				33.	114	111	109	104	103
7.	70	72				34.	115	112	110	105	104
8.	72	73				35.	117	112	112	106	106
9.	73	75				36.	118	114	113	108	107
10.	73	77	70	71	71	37.	119	114	114	109	108
11.	77	79	73	73	74	38.	120	115	116	110	108
12.	77	81	74	75	75	39.	121	116	119	111	109
13.	78	82	76	78	77	40.	123	117	119	113	110
14.	81	84	78	79	79	41.	123	118	120	114	110
15.	84	85	81	80	80	42.	123	120	121	115	112
16.	86	86	82	83	81	43.	123	121	122	117	113
17.	88	88	84	84	83	44.	124	122	123	118	114
18.	91	90	86	86	85	45.	124	123	124	118	115
19.	93	91	88	87	87	46.	125	125	124	120	116
20.	95	94	90	89	87	47.	126	126	125	121	117
21.	98	96	92	90	88	48.	127	128	125	121	118
22.	99	97	94	91	90	49.	128	129	126	121	120
23.	100	98	95	92	92	50.	128		127	123	120
24.	103	100	97	93	92	51.	129		128	123	121
25.	105	101	98	94	93	52.			129	124	123
26.	107	102	100	95	94	53.			129	124	124
27.	109	103	101	97	95	54.			130	126	125
28.	110	105	103	99	96	55.				126	126
29.	111	106	104	100	98	56.				128	128
30.	112	107	105	101	99	57.				129	131
31	112	108	106	102	100	58.					
32	113	109	107	103	102	59					

BOYS

Standard Scores (grade wise)

Raw Score	V	VI	VII	VIII*	Raw Score	V	VI	VII	VIII
0.					30.	123	112	103	96
1.					31.	123	113	104	97
2.					32.	123	114	105	98
3.	69				33.	124	116	106	99
4.	72				34.	125	118	107	100
5.	74	67			35.	126	119	108	102
6.	78	70			36.	128	120	110	103
7.	81	73			37.	130	121	111	104
8.	83	75			38.	130	122	112	105
9.	84	77			39.	132	125	113	106
10.	86	78	68		40.		125	114	107
11.	88	80	71		41.		126	114	108
12.	90	82	73		42.		127	115	109
13.	91	83	75	70	43.		128	116	111
14.	94	86	78	73	44.		129	118	111
15.	96	88	79	74	45.		131	120	112
16.	98	89	81	77	46.		132	120	113
17.	100	91	83	78	47.			122	115
18.	102	93	85	80	48.			124	116
19.	104	95	87	80	49.			124	117
20.	106	97	89	81	50.			126	119
21.	109	99	90	82	51.			127	120
22.	110	101	92	84	52.			127	122
23.	113	103	93	86	53.			128	123
24.	114	105	95	87	54.			129	123
25.	116	106	96	88	55.			129	126
26.	117	108	97	90	56.			130	127
27.	118	109	99	91	57.				130
28.	120	110	100	93	58.				130
29.	121	111	102	95					

*Scores for Grade VIII should be considered as tentative and should be used with some reserve.

GIRLS

Standard Scores (grade wise)

Raw Score	V	VI	VII	VIII*
0.				
1.				
2.				
3.				
4.				
5.	70			
6.	71	69		
7.	73	71		
8.	76	71		
9.	77	73		
10.	80	74		
11.	82	77	69	69
12.	85	78	72	71
13.	86	80	73	73
14.	87	83	75	73
15.	89	85	76	75
16.	91	86	78	76
17.	93	88	80	79
18.	96	90	82	81
19.	98	92	84	82
20.	100	94	86	84
21.	103	96	87	85
22.	105	97	90	87
23.	107	99	91	88
24.	109	100	92	89
25.	110	102	93	90
26.	112	103	95	92
27.	114	105	97	95
28.	115	106	98	96
29.	116	108	99	97
30.	117	109	101	97
31.	118	110	102	99
32.	120	111	104	101
33.	121	113	105	102
34.	121	114	106	103
35.	123	116	107	104
36.	123	117	108	107
37.	123	118	109	108
38.	124	120	110	110
39.	125	121	112	112
40.	126	122	113	113
41.	127	122	114	115
42.	129	123	115	118
43.	129	124	117	118
44.	130	125	118	119
45.	130	126	120	120
46.	130	126	121	121
47.	131	128	122	123
48.	133	128	123	123
49.		130	123	124
50.		131	125	126
51.		133	125	126
52.			127	127
53.			127	128
54.			128	129
55.			128	130
56.			130	131
57.			130	131
58.			131	132
59.				
60.				

*Scores for grade VIII should be considered as tentative and should be used with some reserve.

BOYS *Percentile Norms* **GIRLS**

(age wise)

per-centile	10+	11+	12+	13+	14+
			Scores		
10th	7	11	12	15	15
16th	11	14	14	17	19
25th	14	16	18	21	22
35th	17	17	20	23	26
50th	20	21	24	28	29
65th	23	25	29	34	36
75th	27	30	34	39	41
84th	30	35	38	45	45
90th	34	38	44	49	52
95th	38	44	49	56	58

Per-centile	10+	11+	12+	13+	14+
			Scores		
10th	14	12	15	15	16
16th	15	15	18	17	18
25th	18	18	20	21	22
35th	20	20	22	25	26
50th	23	24	26	29	31
65th	25	29	31	35	35
75th	28	33	34	38	40
84th	34	38	37	42	45
90th	37	42	40	46	49
95th	46	46	45	52	54

BOYS **GIRLS**

(grade wise)

Percentile	V	VI	VII	VIII
		Scores		
10th	7	11	16	20
16th	9	14	18	23
25th	12	16	21	26
35th	14	19	24	29
50th	17	21	28	34
65th	20	25	33	39
75th	22	28	36	43
84th	24	32	42	47
90th	28	35	45	50
95th	34	39	49	55

Percentile	V	VI	VII	VIII
		Scores		
10th	10	13	17	18
16th	12	15	20	21
25th	15	18	22	25
35th	17	20	26	27
50th	20	24	29	32
65th	23	28	34	36
75th	25	31	38	38
84th	28	35	41	41
90th	32	38	45	45
95th	39	44	50	50

APPENDIX

List of Schools for 10-12 plus groups

Boys

1. Delhi Middle School, Bara Hindu Rao.
2. Government High School, Vinay Nagar.
3. Government High School, Timarpur.
4. Government A.V. Middle School, Indra Nagar.
5. Jain Higher Secondary School, Daryaganj.
6. Government High School, Lajpat Nagar.
7. Sanatan Dharam Higher Secondary School, Kundewalan.
8. Government High School, Paharganj.
9. Ramjas Higher Secondary School No. 4, Doctors Lane.
10. Ramjas Higher Secondary School No.2, Anand Parbat.
11. Shri Mahavir Jain Higher Secondary School, Nai Sarak.
12. President Estate Middle School, President Estate.
13. Northern Railwaymen Union, Middle School Railway Colony, Kishanganj.
14. Government High School, 2nd shift, Lodi Road.
15. Rambagh Govt. Middle School, Lajpat Nagar.
16. Government A.V. Middle School, Tihar.
17. Ramjas A. V. Middle School, Chawri Bazar.
18. Government A.V. Middle School, Ramesh Nagar.
19. Multan D.A.V. Middle School, West Patel Nagar.
20. E.P. Central School, Nurjehan Road.
21. Government A.V. Middle School, Shakti Nagar.
22. Government A.V. Middle School, Bara Hindu Rao.
23. Salwan Higher Secondary School, Rajinder Nagar.
24. Government A.V. Middle School 1st. Shift, Kingsway Camp.
25. Government A.V. Middle School, 1st Shift, Jama Masjid.
26. Government A.V. Middle School, Kabuli Gate.
27. Hiralal Jain H.S. School, Sadar Bazar.

Girls

1. Queen Mary's H.S. School, Subzimandi.
2. Government Girls' Middle School, Kashmere Gate.
3. Government A.V. Middle School, Indra Nagar.
4. Government Girls' High School, Khajoor Road, Karol Bagh.
5. Government Middle School, Bela Road.
6. Government High School, Lajpat Nagar.
7. Multan D.A.V. High School, Karol Bagh.
8. A.V. Middle School, Lal Kuan.
9. Government Middle School, Subzimandi.
10. President Estate Middle School, President Estate.

11. Government Girls' High School, Malvia Nagar.
12. S.S.K. Khalsa Girls' High School, Daryagunj.
13. Government Girls' High School, Paharganj.
14. Government Girls' High School, Teliwara.
15. Arya Girls' High School, Teliwara.
16. Francis Girls' High School, Daryagunj
17. E.P. Central Middle School, Nurjahan Road.
18. Government High School, Tilak Nagar.
19. Government Girls' High School, W. Patel Nagar.
20. Government Girls' High School, Jama Masjid.
21. Government Girls' High School, Dina Nath Road.
22. Government Girls' High School, Kingsway Camp.
23. Government Girls' High School, Roshanara Road.
24. Sanatan Dharam Kanya Mahavidyalaya, Beadonpura.
25. Sat Bharawan Arya Kanya Pathshala, Karol Bagh.
26. Jain Girls' Middle School, Dharampura.

List of schools for 13 to 14 plus age groups

Boys

1. Commercial H.S. School, Charkhewalan.
2. Delhi United Christian H.S. School, Ludlow Castle.
3. Shri Mahavir Jain H.S. School, Nai Sarak.
4. Birla Higher Secondary School, Subzimandi.
5. Fatehpuri Muslim High School, Fatehpuri.
6. Jain Sanskrit High School, Dariba Kalan.
7. Government High School, Mori Gate, (First Shift)
8. Kayastha A.V. Middle School, Chahalpuri.
9. Phupchand Viash Middle School, Pahari Dhiraj.
10. Anglo-Arabic H.S. School, Ajmeri Gate.
11. A.S.V.J. Higher Secondary School, Daryaganj.
12. Government Boys' High School, Patel Nagar.
13. S.G.T.B. Khalsa High School, Karol Bagh.
14. Ramjas Higher Secondary School No. 2, Anand Parbat.
15. D.A.V. High School, Karol Bagh.
16. Government A.V. Middle School, I.A.R.I., Pusa Institute.
17. Government A.V. Middle School, East Patel Nagar.
18. Bharat Bharati Middle School, W.E.A. Karol Bagh.
19. Government A.V. Middle School, Dev Nagar.
20. Salwan H.S. School, Rajinder Nagar.
21. Birla Higher Secondary School, Subzimandi.

Girls

1. Government Girls H.S. School, Shakti Nagar.
2. B.M. Gange Girls' H.S. School, Ludlow Castle Road.
3. Government Girls' Middle School, Malka Ganj, Subzimandi.
4. Government Girls' High School, Turkman Gate.
5. Government Model School, Darya Ganj.

6. Sardarni S.B. Kaur H.S. School, Daryaganj.
7. Government Girls' Middle School, 2nd Shift, Bela Road.
8. Government Girls' High School, Roshanara Road.
9. A.G.H.S. School, Chawri Bazar.
10. Government Girls' High School, Kingsway Camp.
11. Raghumal Arya Kanya Pathshala, Raja Bazar.
12. Birla Arya Kanya Pathshala, Kamla Nagar.
13. Government Girls' School, Paharganj.
14. S.G.H.K. Higher Secondary School, Bangla Sahib.
15. Lakshmi Kanya Pathshala, Kucha Chelan.
16. Government Girls' Higher Sec. School, Rajinder Nagar.
17. Government H.S. School, Malka Ganj.
18. Govt. Higher Secondary School, I.A.R.I., Pusa.
19. St. Anthony's Girls' High School, Paharganj.
20. A.V. Middle School, Lal Kuan.

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